

FINAL REPORT

Introduction to Map Study I: Maps in the Classroom

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The importance of readiness in map reading is to help the student begin to observe and analyze the immediate world around him (home, school, local community) by providing structured learning experiences that can become the basis for comparing distant places to those with which he is familiar. If the young blind student is to gain the ability to interpret maps accurately, he first must inspect and manipulate concrete objects in a known, familiar environment. Special efforts must be made to insure that features represented on maps are supported by concrete experiences. Each object or feature symbolized on a map must be conceptualized in terms of the feature itself if adequate interpretation is to be achieved. An understanding of the symbolization process is vital to the blind student's future comprehension of maps.

#### A. Problem requiring solution

This map study project was developed as part of a materials development program for teaching geographic and map reading concepts to young blind students. The ultimate goal of the map reading program is for the young blind student to develop a map concept of his immediate environment and to relate himself to his immediate environment using simple maps.

#### B. Principal objective

The principal objective of this project was the development and evaluation of an instructional program designed to teach young blind students that a known environment can be represented abstractly on a map. The evaluation was a critique by teachers who used the program with blind students to determine the appropriateness of the materials.

#### C. Materials

The program materials include: A teacher's guide, a student screening instrument, 80 lessons in two parts of 40 lessons each, and a response and record section. Also included are: Large symbols for chairs and tables for use in the

workspace room, small symbols and workspace sheets for mapping the room, and simple maps symbolizing various arrangement of furniture in the workspace room. A preliminary screening instrument with criterion tasks is included which can be used to diagnose the student's knowledge of concept relationships and to prescribe activities to remediate individual deficits.

The instructional program progresses from manipulation of concrete objects in a known environment to discrimination/manipulation of abstract symbols on simple maps. Part 1 of the instructional program is designed for use with blind students with a functional age of three years. The lessons teach twenty(20) basic locational and directional referents (e.g., middle, between; near, far; right, left) using chairs and tables within the classroom. The 40 lessons are divided into four sections of ten lessons each with two concepts presented in each lesson. The pairs of concepts are repeated in different contexts in succeeding lessons. In Part 2 the lessons apply the concepts and relationship from Part 1 to operations involving symbols and their use on simple maps. The student is involved in location, placement, and movement operations in a defined workspace (a six-foot square room) using concrete objects ( tables and chairs) and eventually large symbols for the space with small symbols on a workspace sheet (a ten-inch square "map"). The final operations involve the student using a simple map to locate objects in a defined workspace.

The 80 lessons constitute a three-year program which can be initiated with pre-primary level students. The program utilizes a diagnostic/prescriptive approach to instruction which enables the teacher to diagnose the student's progress level at any time and to prescribe lessons and activities to meet specific needs of individual students.

#### D. Procedure

A three year period was devoted to the development and evaluation of an instructional program consisting of 80 lessons in two parts (40 lessons each), with tangible aids that progresses from manipulation of concrete

objects in a known environment to discrimination/manipulation of abstract symbols on simple maps. Phase I: Project development which encompassed the first two project years, utilized a technique described as "critique-in-use". Working along the project leader was a team of six educators located and actively teaching in various educational settings in the Southeast U.S. The team was responsible for applying the program, in its various stages of development, to their classroom instruction and recording any problem or changes encountered. At regular intervals the APH/SOVI staff met with the team to discuss the efficacy of the program at its particular stage and to determine and eventually incorporate any changes to be made in the content of the program. During the two year development phase more than 100 students were involved in the formative evaluation of the instructional program.

Objectives for the first project year were to develop the initial organization of the project and draft Part 1 of the instructional program. The second project year objectives were to complete a working draft of Parts 1 and 2 and make the initial preparations for the evaluation process to be conducted in the third project year. The initiation and conclusion of a final evaluation was the objective for the final project year.

Major Activities. A breakdown of major activities for the project follow:

1. Project year 1:

- Write a first draft of the instructional program, part 1
- Locate possible sites for the "critique-in-use" and select development team
- Meet with and circulate the draft of part 1 to the development team
- Conduct critique-in-use on part 1 through the development team
- Meet with the development team to adopt changes to Part 1 of the instructional program as determined through the "critique-in-use".
- Finalize changes and prepare working draft of Part 1



## 2. Project year 2:

- Write first draft and develop instructional aids for Part 2 of instructional program
- Meet with and circulate draft and aids of Part 2 to the development team
- Conduct critique-in-use on part 2 through development team
- Meet with development team to adopt changes to program and materials of Part 2 as determined through the "critique-in-use"
- finalize Part 2 of the instructional program
- Begin initial preparation for final evaluation process: i.e. preliminary site selection, preparation of working draft of entire instructional program and materials

## 3. Project year 3:

- Selection of six teachers of children in the target population with a total of 20 children serving as subjects; 50% of whom will be between the functional ages of 3 to 5.
- Preparation of multiple program package materials.
- Development of final evaluation forms
- Distribution of materials to final evaluation team
- Final evaluation team uses and evaluates Parts 1 and 2 of the program and submits child-use data to APH/SOVI personnel
- APH/SOVI personnel conducts and records telephone interviews with each member of the final evaluation team
- Final adaptations to the program based on the final evaluation are made.
- Final report written by APH/SOVI project personnel

## E. Results

The three year effort resulted in the development of an effective instructional program with tangible aids as indicated by the reports of the final evaluation team and the child-use data. The effort also resulted in the development of an effective "critique-in-use" technique for use in evaluation of certain educational programs with accompanying aids. The technique allows student and teacher use of the program materials during the developmental stages which affords a check

and balance that minimizes major programmatic changes during the later or final stages of the project. Seventeen Ss (8 blind and 9 partially sighted) from ages 2-7 years participated in the final evaluation. Data was tabulated and a two-tailed  $t$  test for computing the difference between the means for correlated samples was performed on each of the concept areas. The performance results were significant beyond the .01 level in all concept areas included. Results are presented in Tables I and II.

TABLE I

Age Distribution and Extent of Legal Blindness (17 Ss)

Chronological Age	2	3	4	5	6-7	Totally Blind	Partially Sighted
Number of Ss	1	3	5	3	5	8 (47%)	9 (53%)

TABLE II

Maps in the Classroom: Results of t-Test Between Means of Correlated Samples

Task	$\bar{D}$	$\Sigma D^2$	<u>df</u>	<u>t</u>
On, Off	3.56	128	8	8.091**
In Front Of, Behind	5.19	493	15	10.209**
Up, Down	1.67	42	15	6.568**
Over, Under	5.25	506	15	10.088**
Toward, Away	3.38	240	15	6.922**
Middle, Between	6.50	758	15	11.120**
Around, Beside	5.00	482	15	8.553**
Along, Across	6.13	626	14	11.250**
Near, Far	3.80	188	9	5.459**
Right, Left	6.50	698	15	21.468**

\*\* $p < .01$

